Southern Forestry Notes

SERVICE, U. S. DEPARTMENT OF AGRICULTURE

Southern Forest Experiment Station, New Orleans, La.

No. 135 September 1961

COTTONWOOD SEEDS-IN ON BULLDOZED STRIPS

In a stand of cutover hardwood near Vicksburg, Mississippi, cottonwood has been regenerated naturally by clearing or deadening the overstory and then cutting shallow strips or trenches into the ground with a bulldozer. The method was successful because it exposed mineral soil, controlled competing plants, and increased soil moisture.

In the spring of 1960, 30 half-acre plots were established in a riverfront stand that consisted mainly of boxelders but included an average of 1.3 cottonwood seed trees per acre. The soil was Commerce silt loam, and the site index for cottonwood was 120+.

As a first step in preparing for natural seeding, all unwanted overstory trees were removed: on half the plots they were cleared off with the bulldozer, and on the other half they were deadened with chemicals but left standing. Next the soil was bared--on some plots by bulldozing in strips, on some by making furrows with a heavy fireplow, and on some by overall disking. Furrows were about 8 inches deep and 3 feet wide at the top. The bulldozed strips were 10 to 12 feet wide and of three depths: 5-10, 10-15, or 15-20 inches. All treatments were completed in April or early May.

Seedfall and germination began in mid-May and continued into August. On one plot, seedlings became established at the rate of 2 million per acre by June 1. In November, mil-acre stocking on the bulldozed strips ranged from 70 percent for shallow bulldozing after clearing to 98 for medium bulldozing after deadening of the overstory. On plowed plots the average was 32 percent, and on disked plots the stand was a complete failure. For all treatments except plowing, stocking was a little better where the overstory had been deadened rather than cleared.

After a slow start the seedlings grew well. Some gained more than an inch per day from July through September, and ended their first season at a height of 9 feet. In November the average height of dominants was 4 feet where the overstory had been cleared and 3 feet where it had been dead-

ened. Competition, mainly from poke weed and ragweed, was acute on the disked and plowed plots but sparse on bulldozed strips.

These preliminary findings are being corroborated this year by further tests at several locations.--*R.L. Johnson*, Southern Forest Experiment Station; and *E.C. Burkhardt*, Anderson-Tully Company.

LOBLOLLY PLANTERS THIN EARLY

Eight out of ten plantations in the loblolly region of Arkansas, Louisiana, and Texas are thinned by age 15 years. By age 18, virtually all have been thinned once and half of them twice. This finding is from a survey of 65 randomly selected loblolly plantings, primarily on small landownerships.

Nearly all the plantations were on old fields. They ranged from 10 to 27 years in age and from 3 to 31 acres in size. Spacings varied from 4 by 4 to 8 by 10 feet, but averaged 6 by 7.

Average site index of these former agricultural lands was found to be 80, or essentially the same as that of the region's natural woodlands. The range is from 65 to 90. The effects of age and thinning were such that initial spacing had no measurable relation to volume productivity in the stands sampled, but did influence diameter--the wider the spacing the greater the mean tree size.

Mean annual growth by age 25 varied from 1 to 2 cords per acre. By this age the stands that had been thinned twice had produced significantly more merchantable wood than those thinned once. The thinnings were primarily from below.--*William C. Siegel*.

TREE AGE UNIMPORTANT IN LONGLEAF SEED VIABILITY

A study at Alexandria, Louisiana, has shown that age of female parent has no influence on the viability of either fresh or stored longleaf pine seed.

Mature cones were collected from trees averaging 21, 40, and 85 years old. These classes represent trees just reaching cone-bearing size, advanced second-growth, and old-growth residuals. Initial viability was uniformly high for all trees--82 percent. After 5 years of storage at 10 percent moisture content and 34° F., germination averaged 82, 78, and 79 percent for the 3 age classes. The differences were statistically nonsignificant.

Percentages of full seeds were also the same for the 3 age classes.

These results indicate that seed collectors can gather cones from trees of practically all ages, with confidence that germination will not be affected. To the research worker, they indicate one less variable to be considered in measuring responses to other stimuli.--*J.P. Barnett* and *B.F. McLemore*.

SOIL TEXTURE AND SOIL MOISTURE VALUES CLOSELY RELATED

Analysis of 213 disturbed subsoil samples from the forested Coastal Plain of Louisiana, excluding the Florida parishes, corroborates results of other workers in showing that moisture equivalent (M.E.) and percent moisture at 15-atmospheres' tension are related to soil texture. Determinations with 67 of the samples also showed that M.E. and percent moisture at 1/3-atmosphere tension (obtained with pressure cooker) are highly correlated.

The relationships are somewhat similar to those published by Curlin in Louisiana State University Forestry Note 41. One important difference is that here soil texture was related to logarithm of the moisture constants. This transformation was necessary because the variance of M.E. and moisture percent at 15-atmospheres' tension increased with increasing percents of clay (X_1) and silt (X_2). The logarithmic transformation made the variances approximately equal for all values of X_1 and X_2. (Clay content ranged from 1 to 60 percent and silt content from 1 to 73 percent.)

The equations are:

$$Y_1 = 38.57 + 3.653X_1 - 0.0353X_1^2 + 0.522X_2$$

$$Y_2 = 0.57 + 4.651X_1 - 0.0419X_1^2 + 0.102X_2$$

where:

$$Y_1 = 100\ [\text{Log}_{10}\ (\text{moisture equivalent})]$$

$$Y_2 = 100\ [\text{Log}_{10}\ (\text{percent moisture at 15-atmospheres' tension})]$$

X_1 and X_2 are highly significant in both equations. Multiple correlation coefficients are 0.96 for the first equation and 0.99 for the second.

The formula for predicting percent moisture at 1/3-atmosphere tension (Z) from M.E. is:

$$Z = 0.70 + 1.131\ \text{M.E.}$$

This regression is highly significant, with M.E. accounting for 96 percent of the variation in Z.--*James P. Barrett*.

RECENT PUBLICATIONS

Bennett, W.H. *Forest insect conditions in Louisiana, 1960.* Insect conditions in Louisiana, 1960, pp. 27-31. Entomology research Department, Louisiana State University.

*Bower, D.R. *Are scales better than scale sticks?* Southern Lumberman, September 1, 1961, p. 38.

*Campbell, R.S., and Rich, R. *Estimating soil moisture for field studies of plant growth.* Journal of Range Management, May 1961, pp. 130-134.

*Christopher, J.F. *Southern wood industries are in the chips.* Southern Lumberman, July 15, 1961, p. 25.

*Freese, Frank. *Relation of plot size to variability: an approximation.* Journal of Forestry, September 1961, p. 679.

*Grano, C.X. *Does pruning pay off?* Forest Farmer, August 1961, pp. 10-11.

*Guttenberg, Sam, and Row, Clark. *Markets, timber quality influence southern pine stumpage prices.* The Timberman, September 1961, pp. 66-67, 69.

*Hare, R.C. *Heat effects on living plants.* Occasional Paper 183, 32 pp.

*Hatchell, G.E. *A look at 9-year-old seeded loblolly pine.* Forests & People, Third Quarter, 1961, pp. 25, 44-45.

*Jewell, F.F. *Infection of artificially inoculated shortleaf pine hybrids with fusiform rust.* Plant Disease Reporter, August 15, 1961, pp. 639-640.

*McLemore, B.F. *Small, fast-drying cone kiln.* U.S. Forest Service Tree Planters' Notes 47, August 1961, pp. 9-12.

*McLemore, B.F. *Storage of longleaf pine seed.* U.S. Forest Service Tree Planters' Notes 47, August 1961, pp. 15-19.

*Mann, W.F., Jr., and Derr, H.J. *Guidelines for direct-seeding loblolly pine.* Occasional Paper 188, 23 pp.

*Pleasonton, Alfred, and Guttenberg, Sam. *Stimulating woodland management in north Mississippi: an appraisal.* Occasional Paper 185, 18 pp.

*Reynolds, R.R., and Sternitzke, H.S. *Timber stand improvement opportunities in southwest Arkansas.* Southern Lumberman, September 1, 1961, pp. 28, 30-31.

*Row, Clark, and Guttenberg, Sam. *Why pulpwood stumpage prices vary.* Pulpwood production, October 1961, pp. 14, 16.

*Siegel, W.C. *Forest landownership in Louisiana.* Louisiana Forestry Commission Bulletin 5. Ed. 4, 94 pp.

*Siegel, W.C., and Perry, J.D. *Forest taxation in Louisiana.* Occasional Paper 187, 14 pp.

*Smalley, G.W. *In north Alabama, topographic position is key to yellow-poplar sites.* Forest Farmer, August 1961, pp. 14, 16.

*Thames, J.L., and McReynolds, R.D. *A hydraulic soil sampler.* Agricultural Engineering, August 1961, pp. 431-432.

*Ursic, S.J. *Lethal root temperatures of 1-0 loblolly pine seedlings.* U.S. Forest Service Tree Planters' Notes 47, August 1961, pp. 25-28.

*Ursic, S.J. *Post-hole tree planting for stabilizing gullies.* Journal of Soil and Water Conservation, July-August 1961, pp. 188-189.

*Wheeler, P.R. *South destined to become Nation's wood basket.* Forest Farmer, September 1961, pp. 6-7, 18.

*Wheeler, P.R. *Southern wood supplies--today and tomorrow.* The Unit, News Letter No. 90, pp. 9-11. August 1961.

*Woods, Frank, Cassady, J.T., Grano, C.X., and Johnson, R.L. *Hardwood sprout development on cleared sites.* Occasional Paper 186, 9 pp.

---

*Copies are available from the Southern Station.